Homework Number 2

Calculating the Expected value of the Round Trip Time

Find the Round Trip Time (RTT) given the following parameters:
N=15 floors, P=12 passengers, \(v_{\text{rated}} = 1.6 \, \text{m/s} \), \(a_{\text{rated}} = 1.0 \, \text{m/s}^2 \), \(a_{\text{rated}} = 1.0 \, \text{m/s}^3 \)
\(d_f = 4.2 \, \text{m} \)
Assumption: equal floor population and equal floor heights, given:
\(t_{dc} = 3 \, \text{s} \), \(t_{do} = 2 \, \text{s} \), \(t_{pi} = t_{po} = 1.2 \, \text{s} \)
Where \(t_{dc} \) is the time needed for door closing, \(t_{do} \) is the time needed for door opening
\(t_{pi}, t_{po} \) are the time needed for boarding/alighting the elevator, respectively.

Calculating the Minimum Value and the Maximum Value of the RTT

Additional bonus questions:
Based on the above, find the minimum possible value of the round trip time (\(\tau_{\text{min}}\)), and the maximum possible value of the round trip time (\(\tau_{\text{max}}\)).